

## CLAIMS

What is claimed is:

1. A variable venturi-type carburetor with automatic vacuum regulation and  
5 cam control mechanism, comprising:

a base defining a central channel having an upper inlet end and a lower outlet end;

a variable venturi assembly situated in a middle of the central channel, the variable venturi assembly comprising a support, a conical body, and a resilient  
10 member, wherein the support is fixed in the base, a bottom of the conical body is movably connected to the support, a surface of the conical body and the base define a venturi throat, and wherein the resilient member is situated between the support and the conical body;

a fuel reservoir provided in the base;

15 a path structure communicating the fuel reservoir and the venturi throat; and

a cam control mechanism comprising a cam set, a throttle valve set, and a connecting mechanism, wherein the cam set is pivotally installed at the upper inlet end of the base, and cam surface of the cam set abuts upon a top surface of the conical body of the variable venturi assembly, wherein the throttle valve set  
20 is pivotally installed at the lower outlet end of the base, and the throttle valve set comprises a throttle valve for controlling the open/close of the lower outlet end, and wherein the connecting mechanism has one end connected to the cam set and another end connected to the throttle valve set.

2. The variable venturi-type carburetor with automatic vacuum regulation and cam control mechanism according to claim 1, wherein the base comprises a seat, a main body, and an upper lid in sequence, the open inlet end is situated at the upper lid and the open outlet end is situated at the seat, the throttle valve set  
5 comprises a throttle valve shaft pivotally installed at the base, the cam set comprises a camshaft pivotally installed at the upper lid, the connecting mechanism comprises an upper arm, connecting rod, and lower arm, one end of the upper arm is pivotally connected to the camshaft of the cam set, another end of the upper arm is pivotally connected to one end of the connecting rod, and  
10 another end of the connecting rod is pivotally connected to the throttle valve shaft of the throttle valve set.

3. The variable venturi-type carburetor with automatic vacuum regulation and cam control mechanism according to claim 1, wherein the base comprises a seat,  
15 a main body, and an upper lid in sequence, the open inlet end is situated at the upper lid, the open outlet end is situated at the seat, a bottom of the support of the variable venturi assembly is fixed in the base, the support comprises a center shaft sleeve, the conical body has a lower shaft portion movably inserted into the center shaft sleeve of the support, an inner recess is provided at the bottom of the  
20 conical body, the slightly curved surface of the conical body and the flange of the main body define a venturi throat narrowing channel, the resilient member is installed between the conical body and the support to push the conical body upward, one end of the resilient member is restrained by the inner recess, an upper portion of the shaft sleeve inserts into the resilient member, and the path  
25 connects the fuel reservoir and the outlet channel to the venturi throat narrowing

channel.

4. The variable venturi-type carburetor with automatic vacuum regulation and cam control mechanism according to claim 3, wherein the fuel reservoir is  
5 situated inside the main body of the base, the fuel reservoir is annular in shape, the fuel reservoir has a joint hole allowing the fuel reservoir to connect with the fuel supply chamber, the main body comprises a retaining seat, sleeve, emulsifying tube, and horsepower regulation ring, the retaining seat is annular in shape, the retaining seat comprises an upper channel, chamber, and lower  
10 channel, the chamber connects with the upper chamber and the lower channel, the upper channel connects with the outlet channel, the lower channel connects with the sleeve, the lower end of the sleeve is connected to the fuel reservoir, the top of the emulsifying tube is fastened in the upper channel, the emulsifying tube passes through the chamber, the lower channel, and the sleeve, both the inner  
15 diameter of the lower channel and the inner diameter of the sleeve are slightly larger than the outer diameter of the emulsifying tube, the lower distal end of the emulsifying tube extends into the fuel reservoir, the number of the emulsifying tubes depends upon the size of the engine, the path includes the upper channel, the chamber, the lower channel, the sleeve, and the emulsifying tube, vent holes  
20 are provided in the emulsifying tube in the chamber, vent holes are provided in the horsepower regulation ring, the horsepower regulation ring moves between the main body and the retaining seat, vent holes and are respectively provided in the main body and the upper lid for communicating with outer air cleaner, the horsepower regulation ring rotates in angle displacement manner to control the  
25 vent holes of the horsepower regulation ring to align with the vent holes of the

emulsifying tube and the vent holes of the main body, and the horsepower regulation ring also connects with the impeller mechanism.

5. The variable venturi-type carburetor with automatic vacuum regulation and  
5 cam control mechanism according to claim 4, wherein the impeller mechanism comprises the horsepower regulation ring with screw hole, a through hole is provided in the main body, a fixing rod passes through the through hole of the main body and is screwed into the screw hole, the fixing rod is connected to a vacuum valve, the vacuum valve is connected to an engine and the fixing rod  
10 impels the horsepower regulation ring by the engine vacuum suction force.

6. The variable venturi-type carburetor with automatic vacuum regulation and cam control mechanism according to claim 5, wherein the impeller mechanism further comprises a fine tuning mechanism comprising a cam, rotating member,  
15 and adjusting nut, the cam is situated on the throttle valve shaft, the rotating member is pivotally installed on the main body, the adjusting nut is situated at one end of the rotating member, a stopping spring is installed between the rotating member and the adjusting nut, the lower distal end of the adjusting nut abuts upon the surface of the cam, and another end of the rotating member  
20 movably sleeves the fixing rod such that the fixing rod is able to slide in the through hole of the main body.

7. The variable venturi-type carburetor with automatic vacuum regulation and cam control mechanism according to claim 6, wherein a stopping spring is

installed between the rotating member and the adjusting nut.